



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,650	07/19/2006	Bernd Bruchmann	293258US0PCT	7727
22850	7590	09/10/2009	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314				GILLESPIE, BENJAMIN
ART UNIT		PAPER NUMBER		
1796				
NOTIFICATION DATE			DELIVERY MODE	
09/10/2009			ELECTRONIC	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No.	Applicant(s)
	10/586,650	BRUCHMANN ET AL.
	Examiner	Art Unit
	BENJAMIN J. GILLESPIE	1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 04 June 2009.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-9 and 11-21 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-9 and 11-21 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____ . |

Note

1. It is noted that the current rejection sets forth a new ground of rejection, however, said new ground of rejection is necessitated by applicants' amendment filed 6/4/2009. Specifically said amendment includes newly presented claims 11-21 as well as a new limitation for the process of claim 1 – i.e. said process now *consists of* the reaction product of at least one urea and/or thiourea with polyamine.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Anticipation Rejection I

2. **Claims 1, 3, 5, 8, 9, 11, 19-21** are rejected under 35 U.S.C. 102(b) as being anticipated by Rannard et al (Non-Patent Literature Publication).

3. **Regarding claims 1 and 9:** Rannard et al teach functionalized, branched, polyurea that is produced by reacting 1,1'-carbonyl diimidazole (CDI) with tri-functional polyamine, wherein said polyamine contains both primary and secondary amine groups. It should be noted that CDI is a urea and the polyamine has a functionality of 3.

4. Regarding the claimed solvent, catalyst, distillation, and functionalization of claim 1 – it should be noted that these limitations are optional and therefore although Rannard et al fail to list them, they are not required by claim 1.

Art Unit: 1796

5. **Regarding claim 3:** The polyamine comprises bis(aminopropyl)amine, bis(aminohexyl)amine, and tris(aminoethyl)amine.
6. **Regarding claim 5:** The polyamine has a functionality of 3.
7. **Regarding claim 8:** Rannard et al omit solvent.
8. **Regarding claim 11:** Rannard et al omit a catalyst.
9. **Regarding claim 19:** Rannard et al omits subsequent functionalization.
10. **Regarding claims 20 and 21:** The reaction occurs at room temperature and 60°C for the secondary amines.

Anticipation Rejection II

11. **Claims 1, 3-6, 9, 11, 12, and -18-21** are rejected under 35 U.S.C. 102(b) as being anticipated by Rannard et al (GB 2 324 797).
12. **Regarding claims 1 and 9:** Rannard et al teach functionalized, branched, polyurea that is produced by reacting carbonyl diimidazole (CDI) with tri-functional polyamine, wherein said polyamine contains both primary and secondary amine groups. It should be noted that CDI has a urea structure and the polyamine has a functionality of 3.
13. Example 3 teaches the reaction performed in the presence of solvent, in the absence of catalyst, and under-reduced pressure (Page 19). Finally, page 17 lines 18-19 teach that the polyurea can be subjected to subsequent functional modification after the branching has completed – this is taken to satisfy the language “subsequent functionalization.”
14. **Regarding claim 3:** Rannard et al teach polyamine comprising bis(hexamethylene) triamine, N-(2-aminoethyl)-propane-1,3-diamine, and tris(2-aminoethyl)amine (Page 10 lines 1-3; page 14 line 31).

Art Unit: 1796

15. **Regarding claim 4:** The urea is thiocarbonyldiimidazole (Page 14 line 23).
16. **Regarding claim 5:** All of the polyamine are tri-functional.
17. **Regarding claim 6:** As discussed in paragraph 13 - Rannard et al teach solvent.
18. **Regarding claim 11:** The process does not require a catalyst (Page 14 line 28).
19. **Regarding claim 12:** Rannard et al states that “the reaction with primary amine *can* be carried out at ambient temperature in the absence of catalyst”, i.e. catalyst is optional and therefore can be omitted *or included*.
20. **Regarding claims 18 and 19:** As discussed in paragraph 13, polyurea *can* be subjected to subsequent functional modification after the branching has completed – i.e. “subsequent functionalization” may or may not occur.
21. **Regarding claim 20:** The reaction occurs at room temperature (Page 10 line 5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

22. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Obviousness Rejection I

23. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over Rannard et al (GB 2 324 797).

24. **Regarding claim 16:** As discussed in paragraphs 12-13, Rannard et al teach branched polyurea that is the reaction product of polyamine and urea wherein said polyurea is produced under a vacuum – which would result in the removal of liberated amine – thus Rannard et al fail to explicitly teach that said liberated amine should not be distilled off.

25. Nevertheless, it still would have been obvious to refrain from said distillation since example 3 also teaches that after said distilled reaction product is a "sticky solid" – i.e. the removal of the liberated amine results in an increase in viscosity – and keeping the liberated amine in with the branched polyurea would provide the user with a composition that is easily transferable to various containers without the need for introducing additional solvent.

Obviousness Rejection II

26. **Claims 2, 4, 7-8, 15, and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rannard et al (GB 2 324 797) in view of Osterloh et al (U.S. Patent 4,713,440).

27. **Regarding claim 2:** As discussed in paragraphs 12-13, Rannard et al teach branched polyurea that is the reaction product of polyamine and urea wherein said polyurea is useful as a surface coating. Moreover, the desired degree of branching is controlled by introducing difunctional compounds into the reaction system, thereby reducing the number of branches –

however, Rannard et al fail to teach diamine as a suitable difunctional urea reactant (Page 11 lines 18-22).

28. Osterloh et al also teach branched polyurea that is useful as a surface coating and is the reaction product of (A) urea and (B) polyamine. (Abstract; col 1 lines 33-40). In particular, the polyamine comprises both (Bi) diamine and (Bii) triamine, wherein (Bi) consists of compounds such as butylenediamine, hexamethylenediamine, heptamethylenediamine, and octamethylenediamine, and (Bii) consists of tri-functional polyamine, such as tris(aminoethyl)amine (Col 2 lines 15-48).

29. Therefore, it would have been obvious to include diamine – specifically the diamine of Osterloh et al - in Rannard et al since it allows the user to control the desired degree of branching, and Osterloh et al teach said diamine is useful in producing analogous polyurea based on the polyamine + urea reaction.

30. **Regarding claim 4:** As discussed in paragraphs 27-29, the prior art renders obvious surface coatings comprising branched polyurea that is the reaction product of (A) urea and (B) mixtures of di and triamine, however, Rannard et al only teach thiocarbonyl diimidazole and thiocarbonyl diimidazole for component (A).

31. Nevertheless, it would have been obvious to also include urea as an amine-reactive compound since it is disclosed by Osterloh et al as being useful as the amine-reactive compound for analogous polyurea and it is *prima facie* obvious to add a known ingredient for its known function. *In re Linder* 173 USPQ 356; *In re Dial et al* 140 USPQ 244.

32. **Regarding claims 7, 8, and 15:** As discussed in paragraphs 27-29, the prior art renders obvious surface coatings comprising branched polyurea that is the reaction product of (A) urea

Art Unit: 1796

and (B) polyamine, wherein said reaction is conducted in the presence of solvent. Still, Rannard et al fail to teach the solvents listed in claim 7 or an absence of solvent.

33. Therefore, applicants' attention is again directed back to Osterloh et al, which teach that toluene, xylene, and/or hydrocarbons, i.e. decane, dodecane – make useful solvents (Col 5 lines 40-45). Thus it would be obvious to include the solvents of Osterloh et al in Rannard et al since they are disclosed as being useful for the production of an analogous branched polyurea.

34. Regarding claim 8, while Rannard et al fail to explicitly teach that solvent may be omitted and the examples show the inclusion of solvent - Rannard et al never definitively states that solvent is required. Furthermore, Osterloh et al states that the relied upon process "can be carried out" in the presence of solvent – i.e. said solvent is optional and therefore said reaction can also take place in the absence of a solvent. Thus it would have been obvious to also omit solvent since it is disclosed by Osterloh et al as a suitable practice for the production of analogous polyurea.

35. **Regarding claim 17:** As discussed in paragraph 13 – example 3 of Rannard et al teaches reduced pressure which would result in distillation of the liberated amine.

Obviousness Rejection III

36. **Claims 12, 15, 17, and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rannard et al (GB 2 324 797) in view of Rannard et al (Non-Patent Literature Publication).

37. **Regarding claims 12, 15, 17 and 21:** As discussed in paragraphs 12-13, Rannard et al (GB 2 324 797) teach branched polyurea that is the reaction product of (A) urea and (B) polyamine, wherein said reaction can occur at room temperature and does not need the aid of catalyst.

Art Unit: 1796

38. However, it should be noted that the room temperature reaction only occurs between the *primary amine* and urea - the secondary amine groups present on the triamine of Rannard et al (GB 2 324 797) will not react at room temperature and in the absence of catalyst. Therefore, although not necessary for the primary amine, it would have been obvious to include catalyst in Rannard et al (GB 2 324 797) since the secondary amine will remain unreacted and the polyurea will not be sufficiently branched. What's more, Rannard et al (Non-Patent Literature Publication) teach the secondary amine + urea reaction can be further by heating the system to 60°C.

Obviousness Rejection IV

39. **Claim 13** is rejected under 35 U.S.C. 103(a) as being unpatentable over Rannard et al (GB 2 324 797) in view of Rannard et al (Non-Patent Literature Publication) and Osterloh et al (U.S. Patent 4,713,440).

40. As discussed in paragraphs 37-38, Rannard et al (GB 2 324 797) in view of Rannard et al (Non-Patent Literature Publication) render obvious branched polyurea that is the reaction product of (A) urea and (B) polyamine, wherein said reaction occurs in the presence of catalyst - however there is no mention of the specific catalyst from claim 13.

41. As discussed in paragraphs 28 and 29 Osterloh et al also teach branched polyurea that is produced by reacting polyamine and urea in the presence of catalyst. In particular said catalyst comprises organotin compounds – such as dibutyltin dilaurate (Col 5 lines 17-25). Therefore, it would have been obvious to include the catalyst of Osterloh et al in Rannard et al since they are disclosed by Osterloh et al as being useful in the production of analogous polyurea and one of

ordinary skill would understand said catalyst would help the secondary amines react with the remaining urea.

Obviousness Rejection V

42. **Claims 13 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rannard et al (GB 2 324 797) in view of Rannard et al (Non-Patent Literature Publication) and D'Alelio (U.S. Patent 2,340,045).

43. As discussed in paragraphs 37-38, Rannard et al (GB 2 324 797) in view of Rannard et al (Non-Patent Literature Publication) render obvious polyurea that is the reaction product of (A) urea and (B) polyamine, wherein said reaction occurs in the presence of catalyst - however there is no mention of the specific catalyst from claims 13 and 14.

44. D'Alelio teach reactions between polyamine and various urea compounds wherein said reaction is preferably catalyzed with potassium carbonate (Right column of page 1, lines 50-55; left column of page 3, lines 49-52). Therefore, it would have been obvious to include potassium carbonate catalyst in the process of Rannard et al (GB 2 324 797) since it is disclosed by D'Alelio as being useful in aiding the reaction between urea and amine groups, and it is *prima facie* obvious to add a known ingredient for its known function. *In re Linder* 173 USPQ 356; *In re Dial et al* 140 USPQ 244.

Response to Arguments

45. Applicant's arguments with respect to claims 1-9 11-21 have been considered but are moot in view of the new ground(s) of rejection. Specifically, the newly presented rejection presents prior art that discloses branched polyurea that is the reaction product of *only* urea and polyamine.

Terminal Disclaimer

46. The terminal disclaimer filed on 6/15/2009 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent 7,176,271 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Conclusion

47. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

48. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

49. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENJAMIN J. GILLESPIE whose telephone number is (571)272-2472. The examiner can normally be reached on 8am-5:30pm.

50. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Benjamin J Gillespie/
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796